A possible non-calcified dasycladalean alga from the Carboniferous of England

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Synopsis

Dasycladophycus ensomi gen. et sp. nov. is described from the Lower Carboniferous of Somerset, England. It is interpreted as possibly a non-calcified dasycladalean alga.

Introduction

The little fossil described below, collected by Mr Paul Ensom, is from the Carboniferous of Somerset, England. It accompanies the echinoid *Archaeocidaris whatleyensis* Lewis & Ensom, described herein (p. 81). It shows as flattened, black, carbonaceous plant remains on the rock-surface. The structure is like that of a simple non-calcified dasycladalean; comparable algae are known from the Lower Palaeozoic and are still living. This is discussed in detail below, after the description of the alga.

Systematic

? Phylum **CHLOROPHYTA**

Order **DASYCLADALES**

Genus ***DASYCLADOPHYCUS*** nov.

DIAGNOSIS. Simple non-calcified alga showing central stem (? stem-cell) with regular verticils of four branches: each branch straight, slightly swollen, and dividing terminally into four very short branchlets. Holdfast and reproductive structures not seen; associated long whip-like strands possibly part of the plant.

TYPE SPECIES. *D. ensomi* sp. nov.; Lower Carboniferous.

Dasycladophycus ensomi sp. nov.
Fig. 1

DESCRIPTION. The plant is represented by relics of several individuals, all flattened black carbonaceous remains on the rock-surface. The best example shows as a thallus 14 mm long and 3 mm wide (in the flattened state), Fig. 1. From the central stem, about 0·5 mm wide, arise regular whorls or verticils of formerly radiating side-branches, the verticils regularly about 0·5 mm apart in succession. The side branches are about 1·5 mm long and 0·25 mm or less in diameter, swelling slightly from the junction with the central stem as in various known dasycladaleans. Terminally each shows four very short secondary branchlets. Because of the tangled, pressed preservation, it is difficult to evaluate the number of branches per verticil, but four seems probable.

On the rock-face there are long, thin, whip-like single carbonaceous strands, several times the length of the thallus. One or two appear to arise from a thallus, but this is not absolutely

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Fig. 1 *Dasycladophycus ensomi* gen. et sp. nov., thallus with associated long strands, **holotype** ×7. British Museum (Natural History), Department of Palaeontology, register number V.60786.

clear. They are in the same preservation and closely associated with the remains described above.

HOLOTYPE. British Museum (Natural History), Dept of Palaeontology, register number V.60786. From the Lower Carboniferous Clifton Down Limestone (Holkerian) of New Frome Quarry, Whatley, Somerset. Fig. 1.

DISCUSSION. The morphology of this little plant is very much like that of a simple non-calcified dasycladalean. The non-calcified living *Batophora* shows side-branches with more complicated branching systems and bearing reproductive bodies. From the Ordovician, *Archaeobatophora* (Nitecki 1976) is surprisingly similar to *Batophora*, but does not show reproductive bodies. The Silurian *Inopinatella* (Elliott 1971) is similarly preserved and more like *Dasycladophycus* in the simplicity of its branch-structure, though still differing; it was interpreted by me as probably a simple dasycladalean, and compared with abnormal juveniles of a living genus in their pre-calcified stage. The very limited evidence offered by the *Dasycladophycus* fits with a dasycladalean interpretation.

The long whip-like strands could possible be remains of another alga, formerly growing on the same sea-floor and now associated in death. But they appear to be very much part of the remains preserved, even though their junctions with the thalli described are not certain. Comparison with accounts of the living *Caulerpa* (not a dasycladalean), where a system of long prostrate 'runners' throw up branched vegetative growths, convinced me that the Carboniferous fossil remains were not referable to this kind of alga. If the fossils are in fact dasycladalean then it is possible that several long single strands arose from the holdfast of a single *Dasycladophycus* thallus, which itself could have been eventually the fertile part of the whole plant. But this does not occur in any other Dasycladaleans to my knowledge and must remain a speculation.

References

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